WHAT IS CLAIMED:

Claim 1. A peptide antagonist of zonulin comprising an amino acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, SEQ ID NO:24 and SEQ ID NO:35, wherein said peptide antagonist binds to a zonula occludens toxin receptor, yet does not physiologically modulate the opening of mammalian tight junctions.

Claim 2. A method for treatment of gastrointestinal inflammation comprising administering to a subject in need of such treatment, a pharmaceutically effective amount of a peptide antagonist of zonulin, wherein said peptide antagonist comprises an amino acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, and SEQ ID NO:24, wherein said peptide antagonist binds to a zonula occludens toxin receptor in the intestine of said subject, yet does not physiologically modulate the opening of tight junctions in said intestine.

Claim 3. A method for treatment of a condition associated with breakdown of the blood brain barrier comprising administering to a subject in need of such treatment, a pharmaceutically effective amount of a peptide antagonist of zonulin, wherein said peptide

antagonist comprises amino acid sequence SEQ ID NO:35, wherein said peptide antagonist binds to zonula occludens toxin receptor in the brain of said subject, yet does not physiologically modulate the opening of tight junctions in said brain.